

tion block and counting of the animals in each block by enumerators moving on foot may be adopted only at intervals of three to five years.

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I would like to express my sincere thanks

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### 8. LOST PELICANRY

The Spottedbilled or Grey pelican (*Pelicanus philippensis* Gmelin) was first recorded in India well over a century ago (Blyth 1844—quoted by Lamba 1963) and is known to frequent well watered tracts throughout the country. However, for a long time very little was known regarding its breeding in India. Earlier ornithologists believed that the bulk of the Grey pelicans found in India went to Burma to breed (Hume 1890). In later years only two small breeding colonies were reported. One at Buchepalle, Cuddapah District, Andhra Pradesh and another at Kundakolam, Tinnevelly District, Tamil Nadu (then Madras Presidency) (Campbell 1902, Rhenius 1907). Thus the question “where do pelicans breed in India?” had remained to a greater extent unanswered until Neelakantan (1949) discovered, perhaps, the largest pelicanry of India near village Aredu, West Godavari District, Andhra Pradesh. He stated “According to the villagers this sanctuary has been in existence from time out of mind”. He also roughly counted more than 800 adults and 1200 chicks of Grey pelicans, in March 1949. Lamba while studying the nidification of this species at the same site, in 1956-57, discovered some more pelicanries in the close vicini-

ties and called them all the “Kolleru Pelicanries”. During that period, I was a member of the field team and had seen hundreds of Grey pelicans nesting on palmyra trees. Gee (1960) had counted not less than 3,000 pelicans in an area of two square miles at the same spot. Spillett (1968) made a very brief mention of these pelicanries in his report on the survey of wildlife in South and West India. Since then no information seems to have been recorded on these pelicanries.

I had an opportunity to visit this area again after 18 years between 4th December 1974 and 4th February 1975. To my dismay, not a single pelican was found nesting or otherwise.

Enquiries from the local people revealed that pelicans have stopped coming to this area for breeding for the last few years. One old man informed me that sometime in 1964, birds died in large numbers and since then, the pelicans have disappeared. Some other villagers and one educated farmer from Akividu confirmed the deaths, but said that they were mostly among paddy-birds and egrets. None of them were sure whether pelicans also died. Some of these people suggested that the deaths may have been due to endrin poisoning and

MISCELLANEOUS NOTES

claimed that even fishes, frogs and crabs had died. They informed me that a heavy dose of endrin was used on paddy crops, during that period. There was no way to check the authenticity of these reports and the exact year of the reported large scale deaths.

Later, during August-September 1975 and July-August 1976, while looking for heronries, I had covered an area of about 15 miles radius around Kolleru lake. We located quite a few cattle egrets, little egrets, paddybirds and little cormorants, breeding either in mixed or pure colonies. A search was made for pelicans also by making enquiries from the local people and scanning possible habitats. No pelicans were observed. A nomadic poacher who was well aware of heronries in the area had not seen any pelicans. The enquiries were aided by showing pictures of pelicans and other birds to villagers from the HANDBOOK OF BIRDS OF INDIA AND PAKISTAN by Salim Ali and S. D. Ripley (1968).

Apart from the Kolleru area, we twice visited the rivers Krishna and Godavari near Vijaywada and Narsapur respectively, and the Nagarjunasagar Dam once as possible alternative breeding sites, but could not see or get any information on pelicans.

Apparently the Spottedbilled or Grey pelicans have deserted their traditional home at the Kolleru lake, as my first visit was during the known breeding season (October-April) when no pelicans were seen and even though the later trips were in July and September, it is unlikely that the villagers would miss such a large bird.

I wonder why pelicans have disappeared from Kolleru lake and where they have gone? The disappearance of these magnificent birds must have been the effect of change in the ecosystem brought about by human interference.

The palmyra trees on which most of the pelicans used to nest, have been cut down and replaced by coconut palms. As the weight and droppings of birds damage the trees, and coconut is of commercial value, villagers prevent the birds from nesting on them. Noise pollution has also increased due to tractors, trains, motor launches and other vehicular traffic. Pesticides are being used widely on paddy crop.

The decrease in the bird population where pesticides are used is long suspected. DDT, in the diet of domestic fowls reduces the egg production, hatchability and sperm production (Rubin *et al.* 1947, Thomas 1962). The mortality among adult and young robins has been proved to be due to DDT. (Twiest 1965, Wurster *et al.* 1965). However, in India, no studies seem to have been done on wild birds on these lines. In August 1976, I found two Cattle egrets in breeding plumage, lying dead in paddy fields about half a kilometer apart near Kaikalur, Krishna District. They were examined for possible marks of injury or gunshots, none were seen.

Even though no direct evidence is available to incriminate pesticides for the disappearance of the pelicans, in view of the large scale deaths reported by villagers, the possibility of pesticides being a major contributory factor cannot be ruled out. Another important factor for the total disappearance of these pelicanries must have been the shortage of food created by human interference. The Kolleru lake is reduced to large canals and fishing is a major industry. Man's competition, perhaps, left no other alternative to these spectacular birds except to give up their traditional home.

Both Neelakantan and Gee had expressed the fear that if Kolleru is drained out for irrigation, the reduced fish supply would endanger the pelicanries. This has happened, and

one wonders where the new home of pelicans is?

Gee had hoped that the new reservoirs formed by hydro-electric and irrigation projects in India may provide new homes for these birds. Can such reservoirs really serve the purpose, unless they are made suitable for breeding colonies of birds? Proper nesting trees, feeling of safety and abundant food supply are necessary prerequisites for the breeding of birds. Fish being the sole food of pelicans its supply must be really large to meet the needs of adult and young birds. The amount of fish required can be estimated from the figures of "Kolleru pelicanries". Gee had counted over 1,500 nests of Grey pelicans. This means 3,000 adult pelicans were in the area at least for a period of 5 months to complete the breeding. On an average a single pelican is estimated to consume 2 kg of fish per day (Ali and Ripley 1968). So  $2 \text{ kg} \times 3,000 \text{ birds} \times 150 \text{ days} = 9,00,000 \text{ kg}$  of fish would be required for the adults alone. Add to this the requirement of the young ones. This, of course, was the requirement for the largest pelicanry which only Kolleru lake could have provided as there is no other similar lake on the East Coast. In the absence of any other large lake in the area, the pelicans might have dispersed into smaller breeding colonies.

The most recent report I have seen on the breeding haunt of Grey pelicans is that of the pelicanry at Bellur and Bennali, Mandya District, Karnataka (Neginhal 1976). However,

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the strength and the antiquity of this pelicanry is not known. If this pelicanry has come into existence only in the recent past, then it is possible that some of the Kolleru birds are nesting here.

The intriguing question is whether these thousands of pelicans disappeared all of a sudden as stated by a villager, or did the pelicanries diminish gradually? The latter seems to be more probable. If so, why could we not save them? In the developing countries, in the name of progress, human needs take precedence over everything else. But what is progress? As Darling and Darling (1963) say "It certainly is not an anthill existence where total human mass is all that matters".

Disappearance of a pelicanry is not a unique phenomenon of Kolleru. The immense pelicanry near Shwe-gyen on the Sittang river in Burma—20 miles long and 5 miles broad, containing millions of pelicans—also disappeared (Smythies—quoted by Gee). The thought crosses my mind that if pelicans get driven from place to place due to shortage of food, paucity of nesting trees, human interference, pesticide pollution and their own overcrowding then will this species, over the years, change its habits or become extinct?

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## 9. BREEDING OF THE MALLARD (*ANSER PLATYRHYNCHOS*) IN NEPAL

The HANDBOOK Vol. I, p. 162 states that a large proportion of the Mallard visiting the subcontinent in the winter come from Siberia. This duck also (now) breeds in "very small numbers" on the Kashmir lakes. In the Birds of Nepal (1976) the Flemings write (p. 38) "Thought to nest on Titi Lake (South of the Nilgiri peaks of Annapurna)".

In May/June 1977 I was able to confirm this conjecture with actual sight records.

The Titi lake is situated in north central Nepal (28° 38' N, 83° 37' E) at a height of 2622 metres (8600 feet) in a bend on the east side of the Kaligandaki, about 2½ Km. from that river. At its nearest point the Chinese Tibetan border is 45 Km. away. The situation is spectacular with the main peak of Dhaulagiri (8169 m) towering above the lake to the north west. The lake is quite small, very roughly 300 metres long by 200 broad, mostly thickly covered with grass and water plants: less than half consists of clear water, indeed just a "duck pond".

I first visited Titi from 30 April to 2 May 1977. At this time of the year the main spring migration from the subcontinent to the north has passed over the Himalayas, although some stragglers may remain until the end of May. There were five Mallard on the lake, one pair and three apparently unattached males. It was not unreasonable to speculate that three females might be sitting in the thick cover, but we caught no sight of them over the three days. The local people assured us that numerous Mallard did indeed nest and breed there. (Also that they did not molest the birds—apparently, and fortunately for the Mallard, the shooting of one some years ago had been followed within hours by a hail storm which caused considerable devastation!)

Roughly 6 weeks later, from 11 to 13 June, I sent one of my Nepalese boys to look at the lake again. This young man had been with me in May, and on other expeditions into the mountains. He has worked on our farm in Pokhara, where we breed Mallard. I consi-